**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A method for manufacturing a waveguide in a circuit structure [~~structures manufactured with the~~] using a multilayer ceramic technique, [~~in which method the dimensions and structural directions of the circuit structures can be determined by means of x, y and z axes perpendicular to each other, and the~~] wherein said circuit structure [~~unit~~] is assembled of separate [~~ceramic~~] layers of ceramic, said ceramic having a [~~the~~] permittivity $\varepsilon_r$ [~~of~~] which is higher than the corresponding value of air, and wherein, in said multilayer ceramic technique, [~~in which~~] layers, cavities, and holes [~~of the desired shape~~] are made in the ceramic layers and [~~on the surface of which ceramic layer~~] a conductive layer of material is silk screen printed on a ceramic layer [~~the desired location~~], and the circuit structure is completed by exposing the circuit structure to a high temperature, [~~and in which~~] said method [~~for creating a waveguide essentially in the direction of the z-axis~~] comprising the steps of:

[-] forming [~~at least~~] two air-filled channels [~~impedance discontinuities essentially parallel with the yz plane of the structure and of~~] extending the length of the waveguide, wherein [~~are formed in the circuit structure to limit the length a of the~~] a core [~~part~~] of the waveguide is defined between said two air-filled channels [~~in the direction of the x-axis, which impedance discontinuities are accomplished by forming air-filled cavities essentially in the direction of the z-axis on both sides of the core part of the waveguide in the structure,~~];

[-] forming [~~and in the xz plane the core part of the waveguide is limited by~~] essentially parallel first and second planes of conductive material[~~, which are manufactured~~] above and below [~~the ceramic layers that form~~] the core part of the waveguide, wherein [~~in the direction of the y-axis, and which~~] said conductive first and second planes define a top and a bottom [~~are used to limit the measure b~~] of the core [~~part~~] of the waveguide, and wherein said conductive first and second planes are defined between said two air-filled channels [~~in the direction of the y-axis~~].

2. (Currently Amended) The [~~A~~] waveguide manufacturing method according to claim 1, [~~wherein the two impedance discontinuities of the length of the waveguide essentially in the direction of the yz plane of the structure are accomplished~~] further comprising the step of:

[~~- by forming air-filled cavities essentially in the direction of the z-axis on both sides of the core part of the waveguide in the structure~~]

[~~- and by~~] forming [~~placing~~] at least one row of vias in the core part of the waveguide, wherein said at least one row of vias is positioned close to one of the [~~both~~] air-filled channels [~~cavities~~] and each via in the at least one row of vias is filled with conductive material whereby [~~and essentially in the direction of the y-axis, by which~~] said first and second planes of conductive material are galvanically connected.

3. (Currently Amended) A waveguide integrated into a circuit unit [~~units~~] manufactured with a [~~the~~] multilayer ceramic technique, wherein [~~the dimensions and structural directions of the circuit units can be determined by means of x, y and z axis perpendicular to each other, and~~] the circuit unit has been assembled of separate [~~ceramic~~] layers of ceramic, [~~the~~] wherein a permittivity $\varepsilon_r$ of the ceramic [~~which~~] is higher than the corresponding value of air, and wherein, in said multilayer ceramics technique, [~~which~~] layers, cavities, and holes [~~of the desired shape have been~~] are made in the ceramic layers, and [~~on the surface of which ceramic layers~~] a layer of conductive material [~~has been~~] is made on a ceramic layer [~~the desired location~~], [~~which~~] said waveguide [~~comprises~~] comprising:

[-] a core part [~~of the waveguide essentially in the direction of the z-axis of the structure of the circuit unit,~~] defined by:

[~~- at least~~] two air-filled channels [~~impedance discontinuities essentially in the direction of the yz plane, essentially parallel and of~~] extending the length of the sides of the waveguide core [~~, which limit the dimension a of the core part of the waveguide in the direction of the x-axis, which impedance discontinuities essentially~~]

~~in the direction of the yz plane have been formed by means of air-filled cavities and the interface of the core part, and~~];

[-] a bottom [~~first~~] layer of conductive material extending [~~essentially in the direction of the xz plane and essentially of~~] the length of the bottom of the waveguide core[~~,~~]; and

[-] a top [~~second~~] layer of conductive material extending [~~essentially in the direction of the xz plane and essentially of~~] the length of the top of the waveguide core, wherein [~~which first~~] said top and bottom [~~second~~] layers are essentially parallel, wherein said top and bottom layers are defined between said two air-filled channels [~~and which limit the dimension b of the core part of the waveguide in the direction of the y-axis~~].

4. (Currently Amended) The [~~A~~] waveguide according to claim 3, wherein said waveguide core [~~impedance discontinuities essentially in the direction of the yz plane have been formed~~] further comprises:

[~~- of air-filled cavities placed essentially in the direction of the z-axis on both sides of the core part of the waveguide, and~~]

[-] at least one row of vias [~~essentially in the direction of the y-axis,~~] filled with conductive material and positioned [~~placed in at least one row in the core part of the waveguide~~] close to one of the [~~both~~] air-filled channels [~~cavities~~], whereby said [~~by which~~] vias galvanically connect said top [~~first~~] and bottom [~~second~~] layers [~~have been connected~~].

5. (Currently Amended) The [~~A~~] waveguide according to claim 3, wherein a hole [~~has been~~] is made in the top layer of conductive material [~~first surface of the waveguide for exciting the~~] to thereby excite an electromagnetic field intended to propagate in the waveguide core.

6. (Currently Amended) The [~~A~~] waveguide according to claim 4, wherein a hole [~~has been~~] is made in the top layer of conductive material [~~first surface of the waveguide~~], and

wherein [~~through which~~] said hole is fitted with a probe leading [~~has been led~~] to the waveguide core [~~part of the waveguide for exciting the~~] to thereby excite an electromagnetic field intended to propagate in the waveguide.

7. (Currently Amended) The [~~A~~] waveguide according to claim 3, wherein a hole [~~has been~~] is made in the top layer of conductive material [~~first surface of the waveguide~~], and wherein [~~through which~~] said hole is fitted with a coupling loop leading [~~has been led~~] to the waveguide core [~~part of the waveguide for exciting the~~] to thereby excite an electromagnetic field intended to propagate in the waveguide.

8. (New) The waveguide manufacturing method according to claim 1, wherein the multilayer ceramic technique is one of High Temperature Cofired Ceramics (HTCC) or Low Temperature Cofired Ceramics (LTCC).

9. (New) The waveguide manufacturing method according to claim 1, wherein a width of each of the two air-filled channels is substantially one-fourth of a wavelength of a cutoff frequency of the waveguide.

10. (New) The waveguide manufacturing method according to claim 1, wherein a waveform that can propagate in the direction of the length of the waveguide is one of a transverse-electric or transverse-magnetic waveform.

11. (New) The waveguide manufacturing method according to claim 1, wherein an interface between the waveguide core and air in the two air-filled channels form a discontinuity of the characteristic impedance of the waveguide core.

12. (New) The waveguide manufacturing method according to claim 1, wherein most of the ceramic comprising the ceramic structure has same permittivity.

13. (New) The waveguide manufacturing method according to claim 1, wherein the essentially parallel first and second planes of conductive material either (i) substantially cover the surface of the core part of the waveguide or (ii) are partly gridded.

14. (New) The waveguide manufacturing method according to claim 2, wherein the step of forming at least one row of vias in the core part of the waveguide comprises the steps of:

forming a first row of vias in the core part of the waveguide, wherein said first row of vias is positioned close to a first air-filled channel of the two air-filled channels; and

forming a second row of vias in the core part of the waveguide, wherein said second row of vias is positioned close to a second air-filled channel of the two air-filled channels.

15. (New) The waveguide manufacturing method according to claim 14, wherein the step of forming at least one row of vias in the core part of the waveguide further comprises the step of:

forming a third row of vias in the core part of the waveguide.

16. (New) The waveguide manufacturing method according to claim 1, further comprising the step of:

forming at least one row of vias in a remaining portion of ceramic material in the waveguide, said remaining portion being on the other side of one of the two air-filled channels from the waveguide core.

17. (New) The waveguide manufacturing method according to claim 1, further comprising the step of:

forming a quarter-wave transformer at an end of the waveguide core where a signal is fed into the waveguide core.

18. (New) A method for manufacturing a waveguide using a multilayer ceramic manufacturing technique, comprising the steps of:

forming two air-filled channels extending the length of the waveguide, whereby a waveguide core is defined between said two air-filled channels and two remaining waveguide portions are defined outside said two air-filled channels, wherein the waveguide core and the two remaining waveguide portions comprise ceramic material having the same permittivity, and wherein said permittivity is greater than the permittivity of air;

forming a bottom surface of conductive material under the waveguide core, wherein said bottom surface does not extend over the remaining waveguide portions; and

forming a top surface of conductive material on the waveguide core, wherein said top surface does not extend over the reamining waveguide portions, wherein said top and bottom surfaces are substantially parallel planes.

19. (New) The method according to claim 18, further comprising the steps of:

forming a first row of vias in the waveguide core, wherein said first row of vias is positioned close to a first air-filled channel of the two air-filled channels; and

forming a second row of vias in the waveguide core, wherein said second row of vias is positioned close to a second air-filled channel of the two air-filled channels.

20. (New) The method according to claim 18, further comprising the step of:

forming a quarter-wave transformer at an end of the waveguide core where a signal is fed into the waveguide core.